

**Gallagher, Carol**

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**From:** Stevens, Gary  
**Sent:** Monday, June 02, 2014 4:19 PM  
**To:** Gallagher, Carol  
**Subject:** FW: Comments for NUREG/CR-6909  
**Attachments:** Comments to NUREG-6909.docx

4/17/2014  
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**From:** 樋口 洵 [mailto:m\_higu\_kazu@nexyzbb.ne.jp]  
**Sent:** Saturday, May 31, 2014 10:00 PM  
**To:** Stevens, Gary  
**Subject:** Comments for NUREG/CR-6909

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Gary san

I tried to submit my comments for NUREG/CR-6909 in the web system, but I can't understand how to submit a word document in the web system.

I send you my word document directly, could you handle it?

Best regards,  
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*ef. L. Stevens (FOTSA)*

**Tensile and Yield Strength in the Design Fatigue Curves**  
(Comments from Makoto Higuchi)

The UTS and YS used in the fatigue design code are given in Figures A1 to A3 in NUREG/CR-6909 and shown below:

	CS	LAS	SS
YS (MPa)	275.8	482.6	303.4
TS (MPa)	551.6	689.5	648.1
E (GPa)	206.8	206.8	195.1

The basis of these values is not clear except only ASME data and we have some questions about these values. These values should be used for the adjusting mean stress effects on fatigue curves. In such case, two different YS, static or cyclic YS, should be selected. We are discussing about the relationship of the TS and YS of steels in the DFC (Design Fatigue Curve) sub-committee in JWES (Japan Welding Engineering Society).

The static and cyclic YS data were obtained from a lot of fatigue and material data for carbon and low-alloy steels and plotted vs. TS as shown in Figures 1 and 2, respectively. In these figures, a good linear relation can be seen and the linear expressions are also shown in the figures. The static YS is higher than cyclic YS in the higher TS region and lower in the lower TS region and thus the trend line is more steep in Figure 1.

In these figures, the ASME values listed in the above table are also shown. In Figure 1, the ASME YS for both of carbon and low-alloy steels are much lower than the trend line, but in Figure 2, the ASME YS for carbon steel is still lower than the trend line but YS for low-alloy steels is much higher than the trend line.

In any rate, the ASME YS are different from actual material data and seems not reasonable and should be re-examined.

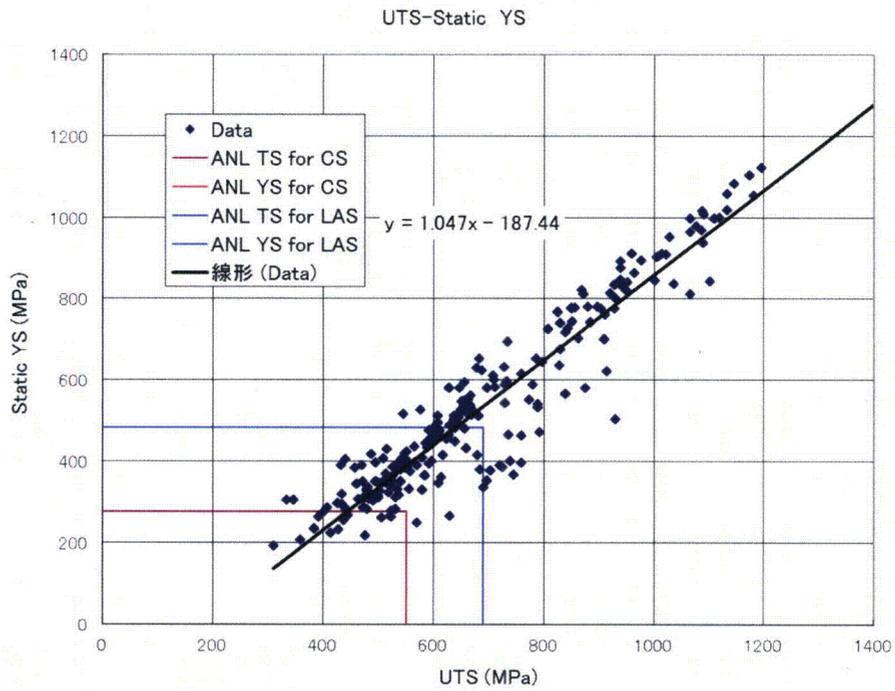


Figure 1 The relation of Static YS to TS for carbon and low-alloy steels

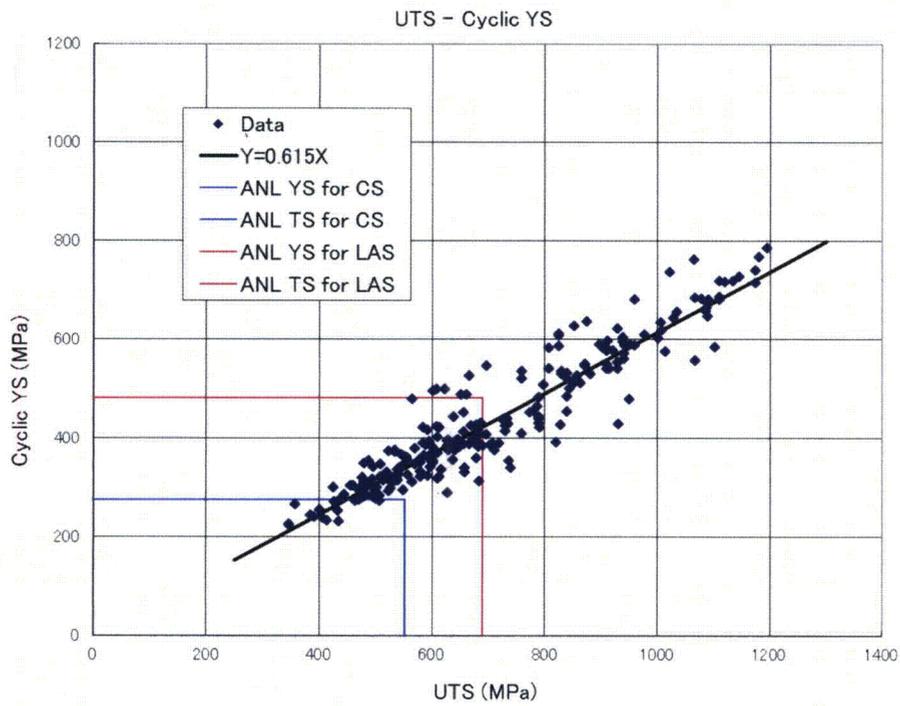


Figure 2 The relation of Cyclic YS to TS for carbon and low-alloy steels